

# NASA TECH BRIEF

*Marshall Space Flight Center*



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## Peak Wind Speed Anemometer (Maxometer)

### The problem:

To design a peak wind speed recording device, with anti-spark properties, capable of measuring wind speeds from 8 m/sec up to 200 m/sec while retaining a permanent record of the peak wind. The device must withstand temperatures up to 810°K (1000°F) and record with an accuracy of  $\pm 5$  percent of reading.

### The solution:

A maxometer employing a drag disk with two constant-rate springs (high and low) and a precision clutching mechanism.

### How it's done:

The maxometer consists of a flat disk mounted on a rod attached to a piston inside a cylinder in which there are two linear springs. The principle of operation is that of a force balance between the dynamic pressure force created by the wind on the disk and the spring compression force. A one-way ball clutch acting between the rod and cylinder end allows the disk-rod piston assembly to translate under wind loading, but prevents return of the assembly when the wind loading is removed. After the graduated scale on the piston displacement cylinder is read, the maxometer is reset by depressing the ball cage. This action disengages the balls and allows the compression springs to return the disk.

Two different maxometer configurations, Models

S and E, with identical measuring and recording techniques, were developed. The primary difference between the two is that the Model S incorporates high temperature materials for launch environments and has a fixed orientation. The Model E is designed for ordinary meteorological environments and is mounted such that the instrument is free to pivot in the horizontal plane for wind vector alignment. Also, a zero adjust mechanism is incorporated into the Model S in order to bias the weight of the moving parts (disk, rod, piston, etc.) when the orientation of the unit is fixed at other than horizontal.

### Note:

Requests for further information may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Code A&TS-TU  
Huntsville, Alabama 35812  
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### Patent status:

No patent action is contemplated by NASA.

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